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Dairy Herd Improvement Letter

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NATIONAL COOPERATIVE DAIRY HERD IMPROVEMENT PROGRAM
A dairy recordkeeping plan for every herd

AGRICULTURAL RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

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STATE AND NATIONAL STANDARDIZED LACTATION AVERAGES BY BREED FOR COWS ON OFFICIAL TEST, CALVING IN 1975 1/

State and national standardized lactation averages by breed for cows on official test that calved in 1975 are presented in tables 1 and 2. Note that these averages are not the same as those used for calculating Predicted Difference.

Records Included in Averages

Only official records that passed the United States Department of Agriculture (USDA) editing (described in the December 1970 Dairy Herd Improvement Letter, ARS 44-222) were included in the averages.

Records Standardized to a 305-Day, Mature Equivalent (ME), 2X basis

Lactations for which cows were denied an opportunity to give milk for 305 days were projected to 305 days with factors that account for differences in lactation curves because of breed, age, and trait (milk or fat). The factors used by USDA were published in the August 1965 Dairy Herd Improvement Letter, ARS-44-164.

All lactations were standardized for age and month-of-calving by the factors published in "USDA-DHIA Factors for Standardizing 305-Day Lactation Records for Age and Month of Calving," ARS-NE-40, September 1974. The factors account for variation associated with age and month-of-calving within breed, season, region, and trait (milk or fat).

Lactations made by milking three or four times a day were then reduced to a two-times-a-day basis with factors published in the January-February 1972 Dairy Herd Improvement Letter, ARS 44-239.

Fat percentages were computed from the 305-day, ME, 2X milk and fat yields.

1/ Prepared by Gerald J. King, dairy husbandman, with technical assistance of James H. Grove, computer programer, and Evelyn F. Myers, statistical assistant, Animal Improvement Programs Laboratory, Beltsville, Md. 20705.

TABLE 1.--STATE AND NATIONAL STANDARDIZED LACTATION AVERAGES FOR AYRSHIRE, GUERNSEY, AND HOLSTEIN COWS ON OFFICIAL TEST, CALVING IN 1975 1/

STATE	AYRSHIRE				GUERNSEY				HOLSTEIN			
	RECORDS	MILK	FAT	FAT	RECORDS	MILK	FAT	FAT	RECORDS	MILK	FAT	FAT
	NO.	LB	PCT	LB	NO.	LB	PCT	LB	NO.	LB	PCT	LB
ALABAMA	58	10,593	3.67	389	170	10,009	4.34	434	4,555	14,959	3.66	548
ALASKA	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	60	15,393	3.48	536
ARIZONA	30	13,220	3.43	453	886	12,029	4.46	536	4,132	16,677	3.45	576
ARKANSAS	(1/)	(1/)	(1/)	(1/)	199	11,049	4.34	480	2,450	14,978	3.41	511
CALIFORNIA	300	12,312	3.94	485	2,985	12,016	4.52	543	86,886	18,067	3.61	652
COLORADO	78	11,344	3.86	438	196	10,753	4.36	469	6,396	16,003	3.51	562
CONNECTICUT	496	12,386	3.92	486	1,085	10,213	4.71	482	13,275	15,504	3.73	578
DELAWARE	156	12,520	4.25	532	26	10,907	4.90	535	1,965	15,963	3.60	574
FLORIDA	190	11,475	3.77	432	374	10,709	4.20	450	2,129	14,288	3.24	462
GEORGIA	116	11,477	3.82	438	524	11,021	4.66	514	7,362	14,596	3.56	520
HAWAII	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	77	15,911	3.06	486
IDAHO	57	10,911	3.88	423	617	9,870	4.55	449	7,751	15,467	3.66	566
ILLINOIS	554	11,363	3.86	439	1,995	10,257	4.67	479	28,481	14,966	3.70	554
INDIANA	304	11,807	3.92	463	3,679	10,784	4.74	511	19,482	15,381	3.69	568
IOWA	1,402	11,300	3.93	444	2,286	9,948	4.70	468	28,619	14,278	3.66	522
KANSAS	638	10,611	3.84	408	763	10,047	4.68	470	21,524	14,819	3.55	527
KENTUCKY	104	10,600	3.54	375	568	10,191	4.48	456	7,666	15,023	3.52	529
LOUISIANA	210	10,167	3.59	365	2,017	9,716	4.22	410	5,580	13,930	3.38	470
MAINE	412	12,834	3.91	502	311	10,628	4.60	489	13,133	15,366	3.61	555
MARYLAND	476	10,593	4.04	428	1,692	9,590	4.69	450	26,733	14,992	3.65	548
MASSACHUSETTS	687	11,231	3.88	436	519	11,087	4.52	501	10,202	15,210	3.57	544
MICHIGAN	45	12,314	3.98	490	2,177	11,100	4.69	521	38,224	15,615	3.71	580
MINNESOTA	813	10,518	3.96	417	3,633	9,934	4.61	458	82,595	14,854	3.65	543
MISSISSIPPI	262	11,011	3.70	403	442	10,374	4.20	435	3,292	14,528	3.39	492
MISSOURI	65	12,656	3.87	490	1,664	10,380	4.59	476	14,152	14,510	3.56	517
MONTANA	120	11,901	3.58	426	56	12,714	4.71	598	1,653	14,659	3.57	524
NEBRASKA	119	9,762	3.83	374	661	9,452	4.69	443	9,261	14,375	3.67	528
NEVADA	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	384	17,252	3.59	619
NEW HAMPSHIRE	632	12,496	3.81	477	215	9,629	4.46	429	6,671	15,340	3.61	554
NEW JERSEY	24	12,582	3.84	483	366	9,459	4.80	454	10,071	15,392	3.70	569
NEW MEXICO	101	12,490	3.65	456	951	11,747	4.18	491	5,078	16,292	3.27	533
NEW YORK	3,455	12,259	3.93	482	2,994	10,649	4.61	491	124,380	15,590	3.61	563
NORTH CAROLINA	201	12,242	3.77	461	671	10,515	4.63	487	22,601	16,030	3.60	578
NORTH DAKOTA	(1/)	(1/)	(1/)	(1/)	43	8,973	4.65	417	2,894	13,285	3.62	480
OHIO	993	12,017	3.84	461	3,683	11,068	4.65	515	35,988	16,008	3.68	590
OKLAHOMA	357	11,965	3.83	458	457	11,746	4.50	528	5,891	15,407	3.53	544
OREGON	164	12,854	3.94	507	1,233	10,774	4.67	503	8,620	16,314	3.66	598
PENNSYLVANIA	1,548	11,908	4.02	479	6,001	10,245	4.70	481	110,142	15,136	3.77	571
PUERTO RICO	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	1,071	11,039	3.14	347
RHODE ISLAND	81	12,224	3.78	462	(1/)	(1/)	(1/)	(1/)	551	14,549	3.58	521
SOUTH CAROLINA	(1/)	(1/)	(1/)	(1/)	1,808	11,114	4.58	509	5,197	15,394	3.62	558
SOUTH DAKOTA	101	11,135	3.97	443	92	12,232	4.42	541	4,478	14,615	3.60	526
TENNESSEE	96	11,133	3.87	431	820	10,388	4.56	473	9,650	15,507	3.57	554
TEXAS	5	15,376	3.77	579	448	9,640	4.48	431	10,420	15,817	3.40	538
UTAH	6	11,622	3.81	443	13	9,728	4.35	423	7,476	16,106	3.57	575
VERMONT	1,492	11,713	3.87	453	462	10,291	4.65	478	22,703	15,095	3.57	540
VIRGINIA	525	11,740	3.73	438	2,568	10,231	4.60	471	36,595	15,187	3.55	540
WASHINGTON	330	13,233	3.94	521	2,646	11,600	4.68	542	20,232	16,913	3.55	601
WEST VIRGINIA	107	9,900	3.78	374	262	9,254	4.68	433	6,536	15,139	3.52	533
WISCONSIN	783	11,301	3.92	443	6,861	10,409	4.63	482	108,495	15,296	3.77	577
WYOMING	2	8,400	3.66	308	30	13,449	4.66	626	498	15,266	3.51	536
UNITED STATES	18,695	11,730	3.90	457	62,149	10,573	4.61	487	1,014,257	15,528	3.65	566

1/ NO LACTATION RECORDS REPORTED.

TABLE 2.--STATE AND NATIONAL STANDARDIZED LACTATION AVERAGES FOR JERSEY, BROWN SWISS, AND MILKING SHORTHORN COWS ON OFFICIAL TEST, CALVING IN 1975 1/

STATE	JERSEY				BROWN SWISS				MILKING SHORTHORN			
	RECORDS	MILK	FAT	FAT	RECORDS	MILK	FAT	FAT	RECORDS	MILK	FAT	FAT
	NO.	LB	PCT	LB	NO.	LB	PCT	LB	NO.	LB	PCT	LB
ALABAMA	2,139	10,647	4.78	510	204	12,505	3.99	499	(1/)	(1/)	(1/)	(1/)
ALASKA	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
ARIZONA	949	11,215	4.92	552	620	16,623	3.80	631	27	11,196	3.73	418
ARKANSAS	664	9,001	4.81	433	28	12,895	3.82	493	92	12,056	3.56	429
CALIFORNIA	5,337	11,080	5.08	563	539	13,797	4.06	560	102	12,015	3.59	431
COLORADO	253	10,110	4.88	493	264	14,848	4.11	610	37	10,757	3.57	384
CONNECTICUT	358	9,708	5.08	493	307	13,692	3.99	547	(1/)	(1/)	(1/)	(1/)
DELAWARE	2	11,155	5.91	660	6	14,943	4.33	648	(1/)	(1/)	(1/)	(1/)
FLORIDA	1,275	9,244	4.36	403	573	12,492	3.48	434	(1/)	(1/)	(1/)	(1/)
GEORGIA	1,387	9,547	4.93	470	327	12,655	3.73	472	(1/)	(1/)	(1/)	(1/)
HAWAII	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
IDAHO	1,184	9,977	4.80	478	77	12,633	3.99	503	12	13,775	3.53	487
ILLINOIS	1,217	9,204	4.96	457	1,310	12,674	4.08	517	67	11,225	3.76	422
INDIANA	1,179	9,179	4.98	457	801	13,240	3.97	525	15	9,225	3.89	358
IOWA	2,004	9,577	4.98	477	2,730	12,733	4.04	514	360	10,138	3.67	372
KANSAS	534	9,342	4.85	453	263	12,839	3.97	510	2	10,025	3.48	349
KENTUCKY	1,961	10,115	4.73	478	254	11,394	3.72	424	(1/)	(1/)	(1/)	(1/)
LOUISIANA	1,719	9,012	4.59	413	111	10,929	3.68	401	(1/)	(1/)	(1/)	(1/)
MAINE	1,160	11,110	4.82	536	54	11,998	4.01	481	95	8,032	3.57	287
MARYLAND	535	8,261	5.02	415	311	12,270	3.85	472	36	9,267	3.57	331
MASSACHUSETTS	1,021	10,004	4.96	496	67	11,982	3.79	455	30	9,332	3.53	329
MICHIGAN	1,759	9,507	4.96	471	306	12,777	4.04	516	10	11,066	3.80	421
MINNESOTA	1,861	9,504	4.83	459	1,427	12,572	3.99	502	512	11,216	3.63	407
MISSISSIPPI	1,726	10,020	4.66	467	20	13,162	3.66	482	(1/)	(1/)	(1/)	(1/)
MISSOURI	1,162	9,455	4.96	469	538	11,833	3.83	453	135	10,477	3.83	402
MONTANA	26	6,965	5.10	354	28	13,362	3.87	517	(1/)	(1/)	(1/)	(1/)
NEBRASKA	84	9,855	4.82	475	454	12,344	4.20	519	190	9,374	3.64	341
NEVADA	513	12,280	4.89	601	8	11,739	3.90	456	(1/)	(1/)	(1/)	(1/)
NEW HAMPSHIRE	936	10,471	4.80	502	87	9,363	3.91	366	2	11,705	4.74	555
NEW JERSEY	348	11,499	4.76	547	148	11,564	4.06	469	(1/)	(1/)	(1/)	(1/)
NEW MEXICO	170	12,134	4.78	580	99	12,293	3.68	452	(1/)	(1/)	(1/)	(1/)
NEW YORK	3,804	9,888	4.97	492	1,506	13,054	3.98	519	42	10,120	3.57	361
NORTH CAROLINA	1,817	9,807	4.93	484	225	12,584	3.97	499	2	8,940	3.60	322
NORTH DAKOTA	9	8,474	4.33	365	155	11,839	3.99	472	21	11,872	3.57	424
OHIO	3,965	10,120	4.99	505	1,347	14,331	4.10	588	166.	10,700	3.74	400
OKLAHOMA	695	9,416	4.81	453	206	12,277	3.89	477	133	10,842	3.48	377
OREGON	3,221	10,656	5.08	541	650	13,573	4.09	555	30	10,273	3.94	404
PENNSYLVANIA	3,617	9,596	5.00	479	813	13,125	4.11	539	91	10,182	3.73	380
PUERTO RICO	1	6,810	2.75	187	4	11,605	3.31	385	(1/)	(1/)	(1/)	(1/)
RHODE ISLAND	37	11,218	5.32	596	1	4,300	4.09	176	(1/)	(1/)	(1/)	(1/)
SOUTH CAROLINA	2,834	11,327	4.94	560	59	13,683	3.99	546	1	11,920	3.05	364
SOUTH DAKOTA	112	8,342	5.04	420	301	11,508	4.07	468	91	8,995	3.61	325
TENNESSEE	3,298	10,484	4.79	502	334	13,242	3.96	524	(1/)	(1/)	(1/)	(1/)
TEXAS	2,739	10,079	4.64	468	994	13,417	3.78	507	(1/)	(1/)	(1/)	(1/)
UTAH	780	10,408	4.85	505	36	13,279	4.07	541	(1/)	(1/)	(1/)	(1/)
VERMONT	4,838	10,220	4.90	501	241	14,397	3.83	552	32	11,505	3.60	414
VIRGINIA	806	10,002	4.82	482	226	11,682	3.90	456	1	9,220	3.31	305
WASHINGTON	3,081	11,140	5.00	557	363	14,861	3.91	580	(1/)	(1/)	(1/)	(1/)
WEST VIRGINIA	393	9,818	4.92	482	18	10,980	3.92	431	25	14,606	3.22	470
WISCONSIN	2,244	9,527	4.95	471	2,194	13,003	4.01	522	289	10,837	3.61	392
WYOMING	58	8,837	4.99	441	1	14,450	4.06	586	(1/)	(1/)	(1/)	(1/)
UNITED STATES	71,812	10,150	4.90	497	21,635	13,063	3.97	519	2,648	10,596	3.64	386

1/ NO LACTATION RECORDS REPORTED.

DISTRIBUTION OF ACTIVE ARTIFICIAL INSEMINATION (AI) SIRES SUMMARIZED BY LEVEL OF PREDICTED DIFFERENCE FOR MILK AND DOLLARS 1/

The average production of daughters and daughters' herdmates of all active AI sires, summarized in the Spring 1977 USDA-DHIA Sire Summary List, was categorized by breed of sire and grouped according to the range of the sires' Predicted Difference (PD) for milk (table 1) and for dollars (table 2).

The average PD's for milk and dollars by breed for 2 years were as follows:

Breed	Spring 1976 Milk Lb	Spring 1977 Milk Lb	Spring 1976 Dollars	Spring 1977 Dollars
Ayrshire	516	504	44	48
Guernsey	428	466	37	44
Holstein	500	554	37	45
Jersey	557	635	48	61
Brown Swiss	440	596	38	58
Milking Shorthorn	745	743	65	72
Average	501	558	37	47

The weighted average PD milk increased for the third straight year. And four of the six breeds increased in average PD milk.

Table 1 shows that in the Spring 1977 Sire Summary, the number of bulls in each breed with PD's for milk of +400 pounds or higher were as follows: 14 of 25 Ayrshires, 41 of 78 Guernseys, 575 of 908 Holsteins, 92 of 113 Jerseys, 27 of 39 Brown Swiss, and 8 of 10 Milking Shorthorns.

Comparison of Spring 1977 data for Active AI sires with non-AI sires shows the following (PDM equals Predicted Difference for milk and PD$ equals Predicted Difference for dollars):

Breed	Average Active AI PDM Lb	Sires above +399 PDM Pct	Sires below 0 PDM Pct	Average non-AI PDM Lb	Sires above +399 PDM Pct	Sires below 0 PDM Pct
Ayrshire	+504	56	4	-79	12	62
Guernsey	+466	53	9	-30	6	57
Holstein	+554	63	11	-148	11	63
Jersey	+635	81	7	-47	15	56
Brown Swiss	+596	69	10	0	14	49
Milking Shorthorn	+743	80	0	+124	16	33

1/ Prepared by Gerald J. King, dairy husbandman, and James H. Grove, computer programer, Animal Improvement Programs Laboratory, Beltsville, Md. 20705.

Breed	Average Active AI PD$	Sires above +39 PD$	Sires below 0 PD$	Average non-AI PD$	Sires above +39 PD$	Sires below 0 PD$
	$	Pct	Pct	$	Pct	Pct
Ayrshire	+48	60	4	-7	12	62
Guernsey	+44	53	10	-2	6	57
Holstein	+45	57	14	-16	7	66
Jersey	+61	80	7	-5	14	56
Brown Swiss	+58	67	10	+1	14	50
Milking Shorthorn	+72	80	0	+12	14	34

The unweighted average superiority for PD milk across breeds is 614 pounds for Active AI sires, and the superiority for PD dollars across breeds is $58 for Active AI sires. Percentages of high PD's and low PD's are nearly reversed for many of the values between active AI and non-AI sires.

Interpretation of Data

A zero Predicted Difference in tables 1 and 2 indicates that a sire with zero PD, used in breed average herds, has about one-half of his daughters above and about one-half below breed average. He can be expected to transmit somewhat less than breed average production to his future progeny because of genetic improvement across the years. In general, the bulls with minus PD's sire daughters of which more than 50 percent are below breed average in production. Bulls with higher PD's are expected to sire daughters with higher production than bulls with lower PD's regardless of herd production level.

What These Data Mean to Dairymen

Dairymen who derive most of their income from the sale of milk should, of course, be using sires with high plus PD's. These tables indicate that the availability of AI sires with plus PD's is sufficient in all breeds to fulfill the requirements of the industry for a pool of germ plasm that will assure a steady increase in production in future generations. The distribution of PD's shown in table 1 indicates that a great deal more selection for increased production could be practiced. For instance, 9.8 percent of sires in all breeds have PD's for milk below zero. This figure has been reduced from 25.9 percent in January 1972. If these sires are used in breed average herds, the probability that they will transmit at least breed average milk production to their daughters is less than 50 percent.[2] The use of bulls with minus or zero PD's should be avoided. Dairymen should be aware that if they use such bulls to breed cows in the same environment, most can expect to have lower herd averages in the future.

On the other hand, 65 percent of the bulls have PD's for milk production of 400 pounds or above. Assuming a repeatability of 60 percent, the probability that such a bull will transmit above-breed-average production to his daughters is at least 87 percent.[2] Thus, these bulls will raise milk production in most herds.

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[2] April 1968 Dairy Herd Improvement Letter, ARS 44-202, pp. 21-23.

For the six breeds listed, 549 sires with a PD for milk of 600 pounds or above were included in the Spring 1977 summary. This number would be enough to breed nearly all of the approximately 50 percent of dairy cows presently being bred to AI bulls in the nation each year. The daughters of these bulls produced milk valued at $79 higher than the milk expected from their breed average herdmates.

TABLE 1. -- AVERAGE PRODUCTION OF MILK AND MILK-FAT OF DAUGHTERS OF SIRES IN ACTIVE AI SERVICE, GROUPED ACCORDING TO RANGE OF PREDICTED DIFFERENCE FOR MILK, SPRING 1977

					AVERAGE PRODUCTION									
					DAUGHTERS			HERDMATES			PREDICTED DIFFERENCES			
PRED. DIFF. MILK RANGE	SIRES IN GROUP	SIRES IN GROUP	DAUGHTERS W/HM	DAUGHTER RECORDS	MILK	FAT	FAT	MILK	FAT	FAT	MILK	FAT	FAT	$
LB	NO.	PCT	NO.	NO.	LB	PCT	LB	LB	PCT	LB	LB	PCT	LB	
					AYRSHIRE									
+1200 TO +1399	2	8.0	558	941	12,581	3.8	481	11,610	3.9	452	+1,304	-0.11	+39	+117
+1000 TO +1199	2	8.0	1,288	2,468	12,638	3.8	482	11,969	3.9	468	+1,059	-.12	+28	+91
+800 TO +999	2	8.0	170	385	12,873	3.8	491	12,076	3.9	465	+918	-.06	+29	+84
+600 TO +799	4	16.0	521	978	11,982	4.0	476	11,479	4.0	457	+662	-.02	+24	+64
+400 TO +599	4	16.0	816	1,448	11,856	3.9	461	11,743	3.9	462	+506	-.07	+12	+42
+200 TO +399	5	20.0	3,108	6,368	11,647	4.0	469	11,863	3.9	468	+299	+.04	+16	+34
0 TO +199	5	20.0	2,030	4,281	11,296	4.0	450	11,645	3.9	453	+77	+.05	+8	+13
-599 TO -400	1	4.0	601	1,349	10,558	4.1	430	11,325	3.9	444	-502	+.12	-8	-37
TOTAL OR SIRE AVERAGE	25	---	9,092	18,218	11,872	3.9	467	11,722	3.9	460	+504	-.02	+18	+48
					GUERNSEY									
+1200 TO +1399	3	3.8	442	682	11,814	4.4	522	10,668	4.5	482	+1,288	-.12	+48	+125
+1000 TO +1199	4	5.1	1,068	2,019	11,688	4.5	527	10,664	4.7	498	+1,096	-.18	+33	+98
+800 TO +999	6	7.7	2,671	5,519	11,778	4.5	535	11,119	4.6	515	+868	-.11	+30	+82
+600 TO +799	16	20.5	3,225	5,392	11,829	4.5	536	11,045	4.6	512	+693	-.09	+24	+66
+400 TO +599	12	15.4	2,491	4,407	10,607	4.6	487	10,323	4.7	483	+512	-.07	+17	+48
+200 TO +399	18	23.1	3,613	6,922	11,081	4.7	518	10,907	4.7	508	+297	.00	+14	+32
0 TO +199	12	15.4	3,797	8,677	10,781	4.7	501	10,890	4.7	508	+112	-.04	+2	+9
-199 TO -1	5	6.4	318	440	10,120	4.7	473	10,631	4.7	495	-96	+.02	-3	-9
-399 TO -200	2	2.6	41	45	9,618	4.8	459	10,619	4.7	504	-282	+.03	-11	-28
TOTAL OR SIRE AVERAGE	78	---	17,666	34,103	11,129	4.6	512	10,812	4.7	503	+466	-.06	+16	+44
					HOLSTEIN									
+1800 TO +1999	4	.4	1,829	3,170	17,449	3.5	615	15,895	3.6	578	+1,860	-.15	+44	+154
+1600 TO +1799	5	.6	1,396	1,864	17,038	3.5	591	15,660	3.6	562	+1,654	-.15	+36	+134
+1400 TO +1599	19	2.1	29,832	59,572	17,652	3.5	621	16,221	3.6	587	+1,468	-.12	+34	+121
+1200 TO +1399	46	5.1	28,927	56,951	17,141	3.5	606	16,024	3.6	582	+1,279	-.12	+28	+104
+1000 TO +1199	60	6.6	62,823	145,851	16,988	3.6	606	16,113	3.6	583	+1,080	-.08	+27	+91
+800 TO +999	146	16.1	86,459	169,654	16,695	3.6	598	16,043	3.6	582	+887	-.07	+22	+75
+600 TO +799	146	16.1	90,917	192,259	16,585	3.6	597	16,150	3.6	586	+693	-.06	+16	+57
+400 TO +599	149	16.4	78,131	158,054	16,034	3.6	581	15,841	3.6	577	+509	-.06	+10	+40
+200 TO +399	140	15.4	53,834	103,698	15,870	3.6	579	15,991	3.6	582	+311	-.03	+7	+25
0 TO +199	98	10.8	33,079	67,795	15,427	3.7	567	15,850	3.6	578	+105	-.01	+2	+8
-199 TO -1	52	5.7	21,148	43,210	15,514	3.7	568	16,256	3.6	591	-95	.00	-4	-10
-399 TO -200	22	2.4	2,193	3,771	15,395	3.7	568	16,421	3.6	599	-269	.00	-10	-26
-599 TO -400	13	1.4	4,025	6,982	14,701	3.6	536	15,944	3.6	575	-481	.00	-17	-46
-799 TO -600	4	.4	2,437	2,977	14,927	3.6	545	16,253	3.6	593	-693	-.02	-28	-70
-999 TO -800	2	.2	359	622	14,055	3.7	522	15,278	3.7	566	-822	.00	-30	-79
-1000 AND BELOW	2	.2	108	133	13,816	3.9	537	15,697	3.7	587	-1,267	+.09	-34	-109
TOTAL OR SIRE AVERAGE	908	---	497,497	1,016,563	16,224	3.6	587	16,021	3.6	582	+554	-.06	+12	+45
					JERSEY									
+1400 TO +1599	2	1.8	83	128	11,356	4.7	532	9,754	5.0	491	+1,508	-.32	+43	+133
+1200 TO +1399	3	2.7	117	172	12,504	4.8	604	11,394	5.0	565	+1,339	-.19	+48	+128
+1000 TO +1199	12	10.6	1,290	2,167	11,366	4.7	539	10,742	4.9	526	+1,071	-.23	+31	+95
+800 TO +999	23	20.4	2,099	3,748	11,028	4.9	540	10,571	4.9	520	+892	-.12	+33	+87
+600 TO +799	20	17.7	6,647	12,389	10,555	4.9	521	10,160	4.9	502	+715	-.09	+28	+71
+400 TO +599	32	28.3	3,790	7,332	10,261	5.0	510	10,243	4.9	505	+504	-.06	+20	+50
+200 TO +399	8	7.1	475	939	10,417	4.9	514	10,619	4.9	523	+296	-.05	+10	+28
0 TO +199	5	4.4	925	2,057	9,328	5.1	473	9,597	5.0	475	+111	+.03	+8	+15
-199 TO -1	2	1.8	73	111	8,872	5.0	446	9,468	4.9	463	-128	+.05	-2	-10
-399 TO -200	5	4.4	226	466	9,990	4.9	490	10,338	4.8	497	-246	+.04	-9	-24
-599 TO -400	1	.9	97	143	8,140	5.0	405	9,039	4.9	439	-520	+.08	-20	-51
TOTAL OR SIRE AVERAGE	113	---	15,822	29,652	10,580	4.9	520	10,348	4.9	509	+635	-.10	+23	+61

TABLE 1. -- AVERAGE PRODUCTION OF MILK AND MILK-FAT OF DAUGHTERS OF SIRES IN ACTIVE AI SERVICE, GROUPED ACCORDING TO RANGE OF PREDICTED DIFFERENCE FOR MILK, SPRING 1977--CONTINUED

					AVERAGE PRODUCTION									
PRED. DIFF. MILK RANGE	SIRES IN GROUP	SIRES IN GROUP	DAUGHTERS W/HM	DAUGHTER RECORDS	DAUGHTERS MILK	FAT	FAT	HERDMATES MILK	FAT	FAT	PREDICTED DIFFERENCES MILK	FAT	FAT	$
LB	NO.	PCT	NO.	NO.	LB	PCT	LB	LB	PCT	LB	LB	PCT	LB	
					BROWN SWISS									
+2000 AND UP	1	2.6	63	133	15,184	3.8	580	13,333	4.0	528	+2,207	-.14	+69	+201
+1400 TO +1599	1	2.6	147	296	12,886	4.1	531	11,814	4.0	475	+1,462	+.05	+66	+155
+1200 TO +1399	2	5.1	356	542	14,290	4.1	583	13,434	4.1	549	+1,304	-.05	+46	+124
+1000 TO +1199	3	7.7	1,226	1,910	14,330	3.9	563	13,524	4.0	538	+1,109	-.10	+32	+98
+800 TO +999	5	12.8	269	393	13,533	3.9	522	13,006	3.9	507	+963	-.07	+30	+88
+600 TO +799	6	15.4	401	767	13,366	4.1	547	13,146	4.0	531	+679	.00	+27	+68
+400 TO +599	9	23.1	897	1,781	12,925	4.1	528	12,751	4.1	519	+479	-.01	+18	+47
+200 TO +399	6	15.4	816	1,404	12,933	4.1	527	12,861	4.1	521	+293	-.01	+11	+29
0 TO +199	2	5.1	576	1,298	12,243	4.1	506	12,645	4.0	511	+91	+.06	+11	+17
-199 TO -1	2	5.1	33	59	12,819	4.1	522	13,421	4.2	565	-127	-.06	-12	-20
-599 TO -400	1	2.6	45	47	12,183	4.2	513	13,629	4.0	545	-501	+.11	-8	-37
-799 TO -600	1	2.6	224	339	11,668	4.4	509	13,012	4.1	529	-733	+.26	-1	-43
TOTAL OR SIRE AVERAGE	39	---	5,053	8,969	13,215	4.0	535	13,005	4.0	525	+596	-.02	+22	+58
					MILKING SHORTHORN									
+1200 TO +1399	2	20.0	148	311	13,178	3.7	484	11,790	3.6	428	+1,253	+0.06	+52	+128
+1000 TO +1199	1	10.0	106	152	11,885	3.5	421	11,239	3.6	407	+1,103	-.05	+35	+101
+800 TO +999	1	10.0	20	46	12,109	3.5	429	11,038	3.6	398	+861	-.02	+30	+82
+600 TO +799	2	20.0	130	281	11,177	3.6	405	10,803	3.6	392	+671	.00	+25	+65
+400 TO +599	2	20.0	125	245	10,430	3.7	383	10,250	3.7	381	+467	+.02	+19	+47
+200 TO +399	2	20.0	27	35	10,597	3.6	382	10,549	3.6	384	+341	-.03	+10	+30
TOTAL OR SIRE AVERAGE	10	---	556	1,070	11,476	3.6	416	10,906	3.6	397	+743	.00	+27	+72
AVERAGE PRODUCTION AND PD VALUES FOR ALL SIRES	1,173	---	545,686	1,108,575	15,108	3.8	569	14,893	3.8	564	+558	-.04	+14	+47

TABLE 2. -- AVERAGE PRODUCTION OF MILK AND MILK-FAT OF DAUGHTERS OF SIRES IN ACTIVE AI SERVICE, GROUPED ACCORDING TO RANGE OF PREDICTED DIFFERENCE FOR DOLLARS, SPRING 1977

					AVERAGE PRODUCTION									
					DAUGHTERS			HERDMATES			PREDICTED DIFFERENCES			
PRED. DIFF. DOLLAR RANGE	SIRES IN GROUP	SIRES IN GROUP	DAUGHTERS W/HM	DAUGHTER RECORDS	MILK	FAT	FAT	MILK	FAT	FAT	MILK	FAT	FAT	$
	NO.	PCT	NO.	NO.	LB	PCT	LB	LB	PCT	LB	LB	PCT	LB	
					AYRSHIRE									
+100 TO +119	3	12.0	801	1,433	12,617	3.8	482	11,714	3.9	455	+1,232	-0.09	+38	+112
+80 TO +99	2	8.0	146	265	12,970	3.9	504	12,061	3.9	465	+874	+.02	+37	+90
+60 TO +79	3	12.0	1,511	2,970	12,042	3.9	465	11,579	3.9	457	+852	-.11	+21	+72
+40 TO +59	7	28.0	1,717	3,357	11,827	4.0	468	11,710	4.0	465	+501	-.03	+16	+46
+20 TO +39	4	16.0	2,286	4,563	11,766	4.0	468	11,884	3.9	467	+305	+.01	+13	+31
0 TO +19	5	20.0	2,030	4,281	11,296	4.0	450	11,645	3.9	453	+77	+.05	+8	+13
-39 TO -20	1	4.0	601	1,349	10,558	4.1	430	11,325	3.9	444	-502	+.12	-8	-37
TOTAL OR SIRE AVERAGE	25	---	9,092	18,218	11,872	3.9	467	11,722	3.9	460	+504	-.02	+18	+48
					GUERNSEY									
+120 TO +139	3	3.8	223	321	12,048	4.6	555	10,851	4.5	494	+1,202	-.01	+56	+129
+100 TO +119	1	1.3	244	395	11,790	4.4	522	10,717	4.7	500	+1,312	-.25	+35	+113
+80 TO +99	9	11.5	4,974	9,620	11,378	4.6	524	10,706	4.7	500	+911	-.09	+34	+89
+60 TO +79	13	16.7	2,084	3,642	11,465	4.6	522	10,727	4.7	501	+712	-.09	+25	+68
+40 TO +59	15	19.2	2,955	4,758	11,308	4.5	513	10,929	4.6	505	+515	-.06	+18	+49
+20 TO +39	20	25.6	3,471	7,237	11,037	4.6	511	10,829	4.6	502	+306	-.04	+11	+29
0 TO +19	9	11.5	2,678	6,664	10,889	4.7	508	10,960	4.7	516	+122	-.05	+1	+8
-19 TO -1	4	5.1	948	1,364	10,417	4.7	486	10,726	4.7	500	-26	-.02	-3	-5
-39 TO -20	4	5.1	89	102	9,661	4.7	453	10,553	4.7	496	-221	.00	-10	-23
TOTAL OR SIRE AVERAGE	78	---	17,666	34,103	11,129	4.6	512	10,812	4.7	503	+466	-.06	+16	+44
					HOLSTEIN									
+160 TO +179	1	.1	30	51	18,881	3.6	671	16,677	3.6	608	+1,874	-.11	+51	+162
+140 TO +159	7	.8	15,480	35,866	17,066	3.6	613	15,716	3.6	568	+1,674	-.06	+51	+151
+120 TO +139	18	2.0	16,428	26,846	17,545	3.6	629	16,137	3.6	581	+1,441	-.06	+43	+129
+100 TO +119	48	5.3	71,976	170,629	17,010	3.6	614	15,987	3.6	581	+1,218	-.07	+34	+106
+80 TO +99	99	10.9	50,989	89,720	16,725	3.6	604	15,988	3.6	579	+1,015	-.06	+28	+88
+60 TO +79	158	17.4	127,622	277,055	16,578	3.6	597	15,983	3.6	579	+816	-.06	+21	+69
+40 TO +59	183	20.2	83,666	170,048	16,456	3.6	597	16,133	3.6	587	+599	-.05	+14	+49
+20 TO +39	177	19.5	67,968	130,576	15,927	3.6	578	15,910	3.6	580	+383	-.05	+7	+30
0 TO +19	94	10.4	31,765	61,294	15,605	3.6	566	15,895	3.6	579	+183	-.05	0	+11
-19 TO -1	74	8.1	17,529	30,462	15,565	3.6	561	16,261	3.6	590	-1	-.05	-7	-8
-39 TO -20	27	3.0	10,143	18,875	15,393	3.6	554	16,234	3.6	592	-200	-.06	-15	-28
-59 TO -40	13	1.4	927	1,236	14,518	3.6	520	15,900	3.6	569	-442	-.04	-21	-48
-79 TO -60	5	.6	348	497	15,104	3.7	562	16,233	3.7	603	-681	+.01	-24	-65
-99 TO -80	3	.3	2,580	3,350	14,425	3.7	529	15,629	3.7	577	-860	-.04	-37	-89
-139 TO -120	1	.1	46	58	13,536	3.8	517	15,610	3.7	577	-1,448	+.07	-44	-130
TOTAL OR SIRE AVERAGE	908	---	497,497	1,016,563	16,224	3.6	587	16,021	3.6	582	+554	-.06	+12	+45
					JERSEY									
+140 TO +159	2	1.8	122	175	11,178	4.9	552	9,561	5.1	487	+1,454	-.14	+59	+147
+120 TO +139	1	.9	36	72	12,142	4.6	560	11,246	4.9	551	+1,505	-.39	+36	+125
+100 TO +119	7	6.2	950	1,471	11,638	4.8	564	10,920	4.9	535	+1,096	-.14	+41	+107
+80 TO +99	28	24.8	7,656	14,378	11,135	4.9	545	10,605	4.9	522	+934	-.14	+34	+90
+60 TO +79	26	23.0	1,601	3,063	10,555	4.9	521	10,266	4.9	505	+691	-.07	+28	+70
+40 TO +59	26	23.0	2,344	3,839	10,299	4.9	506	10,233	4.9	504	+515	-.09	+18	+49
+20 TO +39	10	8.8	1,914	4,278	10,054	5.0	501	10,276	4.9	507	+322	-.05	+12	+31
0 TO +19	5	4.4	803	1,656	9,840	4.9	481	10,033	5.0	499	+182	-.10	0	+10
-19 TO -1	4	3.5	191	379	9,314	5.1	474	9,525	4.9	462	-188	+.10	-1	-12
-39 TO -20	2	1.8	94	167	9,646	4.8	463	10,522	4.8	510	-206	-.05	-15	-28
-59 TO -40	2	1.8	111	174	9,644	4.8	463	10,259	4.8	490	-420	+.01	-20	-46
TOTAL OR SIRE AVERAGE	113	---	15,822	29,652	10,580	4.9	520	10,348	4.9	509	+635	-.10	+23	+61

TABLE 2. -- AVERAGE PRODUCTION OF MILK AND MILK-FAT OF DAUGHTERS OF SIRES IN ACTIVE AI SERVICE, GROUPED ACCORDING TO RANGE OF PREDICTED DIFFERENCE FOR DOLLARS, SPRING 1977--CONTINUED

					AVERAGE PRODUCTION						PREDICTED DIFFERENCES			
					DAUGHTERS			HERDMATES						
PRED. DIFF. DOLLAR RANGE	SIRES IN GROUP	SIRES IN GROUP	DAUGHTERS W/HM	DAUGHTER RECORDS	MILK	FAT	FAT	MILK	FAT	FAT	MILK	FAT	FAT	$
	NO.	PCT	NO.	NO.	LB	PCT	LB	LB	PCT	LB	LB	PCT	LB	
					BROWN SWISS									
+200 AND UP	1	2.6	63	133	15,184	3.8	580	13,333	4.0	528	+2,207	-.14	+69	+201
+140 TO +159	2	5.1	389	688	13,717	4.2	574	12,845	4.1	526	+1,428	+.03	+62	+149
+100 TO +119	4	10.3	1,393	2,191	13,653	4.0	546	12,922	3.9	510	+1,069	-.02	+40	+104
+80 TO +99	5	12.8	171	239	13,619	3.9	533	13,076	4.0	517	+968	-.09	+28	+86
+60 TO +79	6	15.4	565	956	13,688	4.0	554	13,317	4.0	538	+702	-.03	+25	+67
+40 TO +59	8	20.5	759	1,489	12,867	4.1	526	12,750	4.0	516	+481	.00	+19	+48
+20 TO +39	7	17.9	971	1,910	12,891	4.1	524	12,852	4.1	521	+308	-.01	+11	+29
0 TO +19	2	5.1	440	918	12,641	4.0	509	12,878	4.1	523	+177	-.05	+1	+11
-19 TO -1	1	2.6	18	44	13,085	4.0	527	13,318	4.2	555	-55	-.05	-8	-12
-39 TO -20	2	5.1	60	62	12,368	4.2	515	13,577	4.1	560	-350	+.02	-12	-33
-59 TO -40	1	2.6	224	339	11,668	4.4	509	13,012	4.1	529	-733	+.26	-1	-43
TOTAL OR SIRE AVERAGE	39	---	5,053	8,969	13,215	4.0	535	13,005	4.0	525	+596	-.02	+22	+58
					MILKING SHORTHORN									
+120 TO +139	1	10.0	130	276	11,772	3.8	450	10,923	3.7	407	+1,285	+0.10	+58	+136
+100 TO +119	2	20.0	124	187	13,235	3.5	469	11,948	3.6	428	+1,162	-.03	+40	+110
+80 TO +99	1	10.0	20	46	12,109	3.5	429	11,038	3.6	398	+861	-.02	+30	+82
+60 TO +79	2	20.0	130	281	11,177	3.6	405	10,803	3.6	392	+671	.00	+25	+65
+40 TO +59	2	20.0	125	245	10,430	3.7	383	10,250	3.7	381	+467	+.02	+19	+47
+20 TO +39	2	20.0	27	35	10,597	3.6	382	10,549	3.6	384	+341	-.03	+10	+30
TOTAL OR SIRE AVERAGE	10	---	556	1,070	11,476	3.6	416	10,906	3.6	397	+743	.00	+27	+72
AVERAGE PRODUCTION AND PD VALUES FOR ALL SIRES	1,173	---	545,686	1,108,575	15,108	3.8	569	14,893	3.8	564	+558	-.04	+14	+47

OFFICIAL LACTATION RECORDS RECEIVED BY USDA IN 1975 AND 1976, BY STATE WITH SUMMARY OF ERRORS, CONFLICTS, AND SIRE IDENTIFICATION FOR 1976 1/

A total of 2,515,217 Official DHI and DHIR lactation records were reported to USDA in 1976 for use in research involving the genetic evaluation of dairy bulls and cows. The number reported for each State is shown in table 1. They include records for the USDA-DHIA Sire Summary runs of Spring 1976, Fall 1976, and Winter 1977 for calendar year 1976.

Records Reported But Not Used in Genetic Evaluation, 1976

Of the 2,515,217 official lactation records submitted to USDA in 1976, the following were not used for genetic evaluation of bulls and cows:

Edit and reason for rejection	Number	Percent of records submitted
Preliminary edit:		
Grade sire number all zeros	1,057,840	42.06
Registered sire number all zeros	3,986	.16
Other invalid data items	62,325	2.48
Main edit:		
Conflicts with another record	137,524	5.47
Total	1,261,675	50.17

Table 2 shows errors and conflicts noted in 1976 rather than the number of records in error. As many as four errors or conflicts or both may be coded for a single record. Table 2 shows that missing identification numbers for sires of grade cows caused rejection of 1,057,840 records. The next most frequent cause of rejection--48,939--was that the cow number was all zeros. Next, with a loss of 48,196 records, was conflicting or questionable birth date.

The records rejected during the main edit are returned to the appropriate processing center for correction.

Increased care in identifying (including the reporting of sire and dam numbers) and reporting all animals in each herd would greatly increase the number of records used for bull and cow evaluation.

1/ Prepared by Gerald J. King, dairy husbandman, and Evelyn F. Myers, statistical assistant, Animal Improvement Programs Laboratory, Beltsville, Md. 20705.

Sire Identification in Official Lactation Records, 1976, by State

Table 3 shows the numbers and percentages of reported sire numbers that were nonzero and zero for 1976, by State. Some States' year-to-year comparisons may not be appropriate because of large fluctuations in the number of records reported from year to year.

In 1976, missing sire identification (ID) continued to be the main reason why many Official DHI and DHIR records are not useful in sire and cow evaluation.

Summary of Official Lactation Records Received by USDA Since 1957

Table 4 shows a summary of the numbers of official lactation records received since 1957. The number of records received annually has increased from just over one-half of a million in 1957 to over 2-1/2 million in 1976. The percentage of Official DHI and DHIR cows represented has increased from 38.2 percent in 1957 to 103.2 percent in 1976, when 2,438,365 cows were enrolled and 2,515,217 records were received. Percentages exceeding 100 are possible because of varying reporting and processing procedures.

Table 4 also shows the trend between 1969 and 1976 in percentage of Official DHI and DHIR lactations reported to USDA with missing sire ID, losses due to other errors found in editing, and the number of records used. There was a decrease in the proportion of cows without sire ID this year, and there is a continuing increase in the number of records that contain valid sire ID for use in genetic evaluation.

TABLE 1.-- LACTATION RECORDS RECEIVED BY USDA IN 1975 AND 1976 FOR BULL AND COW EVALUATION 1/

STATE	1975 LACTATION RECORDS			1976 LACTATION RECORDS		
	OFFICIAL DHI AND DHIR COWS ON TEST 1-1-75	RECEIVED	PERCENTAGE OF COWS ENROLLED IN OFFICIAL DHI AND DHIR 2/	OFFICIAL DHI AND DHIR COWS ON TEST 1-1-76	RECEIVED	PERCENTAGE OF COWS ENROLLED IN OFFICIAL DHI AND DHIR 2/
	NO.	NO.		NO.	NO.	
ALABAMA	28,744	23,572	82.0	27,627	25,500	92.3
ALASKA	44	44	100.0	67	69	103.0
ARIZONA	32,170	32,502	101.0	31,820	36,290	114.0
ARKANSAS	7,053	7,959	112.8	7,030	8,348	118.7
CALIFORNIA	359,834	362,190	100.7	354,614	375,630	105.9
COLORADO	24,633	23,903	97.0	23,785	25,038	105.3
CONNECTICUT	22,174	22,972	103.6	23,217	21,724	93.6
DELAWARE	3,226	3,542	109.8	3,171	3,689	116.3
FLORIDA	17,878	24,568	137.4	15,817	15,462	97.8
GEORGIA	33,317	31,888	95.7	32,631	31,797	97.4
HAWAII	5,444	4,072	74.8	3,994	4,167	104.3
IDAHO	31,097	26,194	84.2	31,920	30,182	94.6
ILLINOIS	58,049	62,770	108.1	59,424	58,297	98.1
INDIANA	45,414	41,250	90.8	46,757	47,101	100.7
IOWA	68,542	76,627	111.8	68,811	78,978	114.8
KANSAS	47,025	50,944	108.3	43,950	48,887	111.2
KENTUCKY	25,552	22,016	86.2	24,849	23,549	94.8
LOUISIANA	28,503	23,791	83.5	29,370	26,935	91.7
MAINE	18,440	20,930	113.5	20,616	21,232	103.0
MARYLAND	47,968	45,955	95.8	48,461	47,491	98.0
MASSACHUSETTS	17,102	19,798	115.8	18,188	19,663	108.1
MICHIGAN	87,636	149,139	170.2	89,408	94,927	106.2
MINNESOTA	152,364	159,005	104.4	152,417	168,935	110.8
MISSISSIPPI	22,032	17,219	78.2	21,778	20,118	92.4
MISSOURI	41,102	45,388	110.4	39,979	47,218	118.1
MONTANA	5,005	4,834	96.6	5,804	3,684	63.5
NEBRASKA	26,221	28,130	107.3	24,442	28,406	116.2
NEVADA	7,749	6,962	89.8	6,696	6,818	101.8
NEW HAMPSHIRE	10,581	12,217	115.5	11,285	11,808	104.6
NEW JERSEY	16,296	17,396	106.8	16,345	16,388	100.3
NEW MEXICO	13,079	19,855	151.8	15,151	18,404	121.5
NEW YORK	191,286	192,343	100.6	190,257	196,414	103.2
NORTH CAROLINA	58,207	52,777	90.7	58,196	57,666	99.1
NORTH DAKOTA	6,701	7,613	113.6	6,273	7,179	114.4
OHIO	88,011	84,924	96.5	86,842	86,025	99.1
OKLAHOMA	26,370	28,223	107.0	24,038	27,319	113.6
OREGON	37,328	30,575	81.9	35,675	35,375	99.2
PENNSYLVANIA	166,167	160,750	96.7	169,723	165,028	97.2
PUERTO RICO	(3/)	0	0	17,731	15,108	85.2
RHODE ISLAND	1,324	1,377	104.0	1,038	1,112	107.1
SOUTH CAROLINA	29,664	25,369	85.5	29,752	28,836	96.9
SOUTH DAKOTA	10,262	11,439	111.5	9,748	10,601	108.8
TENNESSEE	38,474	33,325	86.6	40,279	38,062	94.5
TEXAS	40,055	31,817	79.4	37,527	36,509	97.3
UTAH	33,008	32,104	97.3	31,924	32,314	101.2
VERMONT	42,741	43,901	102.7	41,633	42,653	102.4
VIRGINIA	73,139	66,119	90.4	75,774	74,662	98.5
WASHINGTON	64,620	57,544	89.0	68,277	67,706	99.2
WEST VIRGINIA	12,016	13,611	113.3	12,542	12,343	98.4
WISCONSIN	191,057	180,267	94.4	198,807	210,652	106.0
WYOMING	2,304	3,155	136.9	2,905	2,918	103.3
UNITED STATES	2,417,008	2,444,865	101.2	2,438,365	2,515,217	103.2

1/ LACTATION RECORD INPUT FOR USDA-DHIA SIRE SUMMARY RUNS FOR MAY 1975, SEPTEMBER 1975, AND JANUARY 1976 FOR CALENDAR YEAR 1975 AND FOR MAY 1976, SEPTEMBER 1976, AND JANUARY 1977 FOR CALENDAR YEAR 1976.

2/ PERCENTAGES VARY BY STATE AND MAY EXCEED 100 PERCENT DEPENDING ON YEAR-TO-YEAR REPORTING AND PROCESSING PROCEDURES.

3/ NOT INCLUDED WERE 15,953 COWS ON OFFICIAL DHI TESTING IN PUERTO RICO.

TABLE 2.--RELATIVE FREQUENCY OF ERRORS OR CONFLICTS IN OFFICIAL LACTATION RECORDS REPORTED TO USDA IN 1976 1/

PRELIMINARY EDIT	MAIN EDIT 2/ 3/ 4/ CODE	ERRORS OR CONFLICTS	NUMBER OF ERRORS OR CONFLICTS	PERCENTAGE OF ERRORS OR CONFLICTS	PERCENTAGE OF RECORDS REPORTED
GRADE		SIRE NUMBER ALL ZEROS	1,057,840	82.55	42.06
REGISTERED		COW NUMBER ALL ZEROS	48,939	3.82	1.96
	B	CONFLICTING OR QUESTIONABLE BIRTH DATE	48,196	3.81	1.92
	A 5/	CONFLICT WITH INFORMATION PREVIOUSLY REPORTED	28,795	2.25	1.14
	F	CONFLICTING OR QUESTIONABLE CALVING DATE	25,169	1.96	1.00
	D	CONFLICTING OR QUESTIONABLE DAM NUMBER	11,025	.86	.44
	S	CONFLICTING OR QUESTIONABLE SIRE NUMBER	10,144	.79	.40
	C 5/	CONFLICTING OR QUESTIONABLE COW NUMBER	8,995	.70	.36
	P	CONFLICTING OR QUESTIONABLE FAT PERCENT	5,866	.46	.23
REGISTERED		DAM NUMBER ALL ZEROS	5,040	.39	.20
REGISTERED		COW BREED ZERO 4/	4,362	.34	.17
REGISTERED		SIRE NUMBER ALL ZEROS	3,986	.31	.16
	M	CONFLICTING OR QUESTIONABLE MILK POUNDS	2,860	.22	.11
REGISTERED/GRADE		SIRE BREED ZERO 4/	2,108	.16	.08
	O	CONFLICTING OR QUESTIONABLE FAT POUNDS	1,932	.15	.08
REGISTERED		COW AND SIRE BREED UNEQUAL	1,911	.15	.08
REGISTERED		COW AND DAM BREED UNEQUAL	1,909	.15	.08
	J	EQUAL IDENTIFICATION NUMBER FOR TWO OR MORE OF THE ANIMALS IN THE PEDIGREE	1,740	.14	.07
REGISTERED/GRADE		DAYS IN MILK ZERO	1,271	.10	.05
	I	INVALID CHARACTERS--USUALLY BLANKS OR ALPHABETICS	1,237	.10	.05
REGISTERED/GRADE		BLANKS IN ANY POSITION OF RECORD	1,173	.09	.05
REGISTERED/GRADE		DAM BREED ZERO OR BLANK 4/	1,173	.09	.05
	G	INVALID STATE CODE	1,069	.08	.04
REGISTERED		DAM NUMBER ALPHABETIC	754	.06	.03
	N	CONFLICTING OR QUESTIONABLE DAYS IN MILK	687	.05	.03
GRADE		EARTAG COW BREED "NON-EIGHT", SIRE BREED UNEQUAL	665	.05	.03
REGISTERED/GRADE		ALPHA IN HIGH-ORDER 2 POSITIONS OF COW NUMBER	537	.04	.02
REGISTERED		COW NUMBER ALPHABETIC	478	.04	.02
REGISTERED		COW BREED "EIGHT"	361	.03	.01
REGISTERED		SIRE NUMBER ALPHABETIC	230	.02	.01
GRADE		EARTAG COW BREED "EIGHT", "NON-EIGHT" SIRE AND DAM EQUAL	219	.02	.01
	E	CONFLICTING OR QUESTIONABLE BREED CODE	185	.01	.01
REGISTERED		SIRE NUMBER IS AN EARTAG	141	.01	.01
REGISTERED/GRADE		ALPHA IN HIGH-ORDER 2 POSITIONS OF SIRE NUMBER	135	.01	.01
REGISTERED/GRADE		ALPHA IN HIGH-ORDER 2 POSITIONS OF DAM NUMBER	128	.01	.01
REGISTERED/GRADE		DAYS IN MILK BLANK	84	.01	(6/)
REGISTERED/GRADE		J THROUGH Z IN TERMINATION CODE	59	(6/)	(6/)
	L	DAYS MILKED 3X EXCEEDS TOTAL DAYS MILKED	1	(6/)	(6/)
TOTAL OR PERCENT OF ERRORS/CONFLICTS			1,281,402	100.03	6/ 50.98

1/ TOTAL LACTATION RECORDS REPORTED = 2,515,217; TOTAL LACTATION RECORDS REJECTED = 1,261,675.

2/ CONDITIONS USING THESE CODES WERE DISCOVERED IN THE MAIN EDIT AND WERE RECORDED ON THE ERROR TAPES RETURNED TO THE PROCESSING CENTERS. ALL OTHERS WERE DISCOVERED IN THE PRELIMINARY EDIT.

3/ DETAILED EXPLANATIONS OF THE MAIN EDIT REJECT CODES ARE IN DECEMBER 1970 DAIRY HERD IMPROVEMENT LETTER, ARS 44-222.

4/ BUT A NONZERO ID NUMBER. 5/ AN ADDITIONAL 3,413 RECORDS WERE DELETED FROM THE MASTER FILE BECAUSE OF CONFLICTS WITH CURRENT RECORDS.

6/ PERCENTAGE LESS THAN 0.01. MOST VALUES OF 0.01 ARE ROUNDED FROM 0.0050 - 0.0099. PERCENTAGE OF 50.98 IS SUM OF INDIVIDUAL PERCENTAGES.

TABLE 3.--SIRE IDENTIFICATION IN OFFICIAL LACTATION RECORDS 1976, BY STATE

STATE	NONZERO SIRE NUMBERS	PERCENTAGE OF ALL RECORDS RECEIVED	ZERO SIRE NUMBERS			PERCENTAGE OF ALL RECORDS RECEIVED
			GRADE	REGISTERED	TOTAL	
	NO.		NO.	NO.	NO.	
ALABAMA----------	8,194	32.1	17,306	0	17,306	67.8
ALASKA-----------	69	100.0	0	0	0	0
ARIZONA----------	13,427	36.9	22,740	123	22,863	63.0
ARKANSAS---------	5,095	61.0	3,253	0	3,253	68.9
CALIFORNIA-------	172,974	46.0	202,311	345	202,656	53.9
COLORADO---------	14,265	56.9	10,683	90	10,773	43.0
CONNECTICUT------	15,000	65.0	6,723	1	6,724	30.9
DELAWARE---------	2,639	71.5	1,050	0	1,050	28.4
FLORIDA----------	6,125	39.6	9,321	16	9,337	60.3
GEORGIA----------	11,368	35.7	20,429	0	20,429	64.2
HAWAII-----------	258	6.6	3,892	17	3,909	93.8
IDAHO------------	12,206	40.4	17,968	8	17,976	59.6
ILLINOIS---------	38,227	65.6	19,881	189	20,070	34.4
INDIANA----------	28,389	60.3	18,710	2	18,712	39.7
IOWA-------------	47,364	60.0	31,614	0	31,614	40.0
KANSAS-----------	28,931	59.2	19,954	2	19,956	40.8
KENTUCKY---------	11,592	49.2	11,957	0	11,957	50.8
LOUISIANA--------	10,760	40.0	16,175	0	16,175	63.1
MAINE------------	16,337	76.9	4,887	8	4,895	42.3
MARYLAND---------	38,520	81.1	8,811	160	8,971	18.9
MASSACHUSETTS----	13,202	67.1	6,460	1	6,461	32.8
MICHIGAN---------	52,578	55.4	42,302	47	42,349	44.6
MINNESOTA--------	104,645	61.9	64,286	4	64,290	38.1
MISSISSIPPI------	6,793	33.8	13,325	0	13,325	66.2
MISSOURI---------	26,369	55.8	20,849	0	20,849	44.2
MONTANA----------	2,857	77.6	794	33	827	22.4
NEBRASKA---------	14,228	50.1	14,176	2	14,178	49.9
NEVADA-----------	3,691	54.1	3,117	10	3,127	45.9
NEW HAMPSHIRE----	9,201	77.9	2,607	0	2,607	22.1
NEW JERSEY-------	11,555	70.5	4,833	0	4,833	29.5
NEW MEXICO-------	12,108	65.8	6,282	14	6,296	34.2
NEW YORK---------	145,512	74.1	50,886	16	50,902	25.9
NORTH CAROLINA---	28,396	49.2	29,266	4	29,270	50.8
NORTH DAKOTA-----	4,346	60.5	2,833	0	2,833	39.5
OHIO-------------	55,360	64.4	30,451	214	30,665	35.6
OKLAHOMA---------	11,844	43.4	15,474	1	15,475	56.6
OREGON-----------	16,899	47.8	18,414	62	18,476	52.2
PENNSYLVANIA-----	131,094	79.4	33,683	251	33,934	20.6
PUERTO RICO------	1,534	10.2	13,574	0	13,574	89.8
RHODE ISLAND-----	764	68.7	348	0	348	31.3
SOUTH CAROLINA---	12,318	42.7	16,513	5	16,518	57.3
SOUTH DAKOTA-----	5,791	54.6	4,810	0	4,810	45.4
TENNESSEE--------	15,548	40.8	22,514	0	22,514	59.2
TEXAS------------	17,662	48.4	18,809	38	18,847	51.6
UTAH-------------	15,322	47.4	16,946	46	16,992	52.6
VERMONT----------	31,720	74.4	10,933	0	10,933	25.6
VIRGINIA---------	44,914	60.2	29,747	1	29,748	39.8
WASHINGTON-------	29,602	43.7	38,074	30	38,104	56.3
WEST VIRGINIA----	7,885	63.9	4,457	1	4,458	36.1
WISCONSIN--------	135,711	64.4	72,744	2,197	74,941	35.6
WYOMING----------	2,202	75.5	668	48	716	24.5
UNITED STATES----	1,453,391	57.8	1,057,840	3,986	1,061,826	42.2

TABLE 4.--SUMMARY OF OFFICIAL LACTATION RECORDS RECEIVED BY USDA SINCE 1957 1/

YEAR	OFFICIAL DHI AND DHIR COWS ENROLLED ON JAN. 1 EACH YEAR	LACTATION RECORDS RECEIVED BY USDA	OFFICIAL DHI AND DHIR COWS REPRESENTED BY RECORDS REPORTED	LACTATIONS REPORTED WITH ZERO SIRE NUMBER		LACTATIONS REJECTED BY OTHER ERRORS		LACTATION RECORDS USED	
	NO.	NO.	PCT	NO.	PCT	NO.	PCT	NO.	PCT
1957--	1,479,799	565,360	38.2						
1958--	1,548,884	786,496	50.8						
1959--	1,607,538	927,998	57.7						
1960--	1,746,752	886,495	50.8						
1961--	1,867,469	1,084,799	58.1						
1962--	1,958,355	1,211,407	61.9						
1963--	2,006,534	1,320,423	65.8						
1964--	2,010,144	1,437,959	71.5						
1965--	2,087,581	1,749,752	83.8						
1966--	2,058,592	1,788,974	86.9						
1967--	2,098,919	1,851,274	88.2						
1968--	2,131,929	1,916,831	89.9						
1969--	2,138,953	1,870,276	87.4	803,926	42.98	65,978	3.52	1,000,372	53.50
1970--	2,122,011	1,907,042	89.9	782,474	41.03	67,032	3.51	1,057,536	55.46
1971--	2,211,366	2,066,743	93.2	852,605	41.25	79,203	3.83	1,134,935	54.92
1972--	2,237,649	2,143,259	95.8	899,087	41.95	76,571	3.57	1,167,601	54.48
1973--	2,349,211	2,417,721	102.9	1,044,785	43.21	94,848	3.92	1,278,088	52.86
1974--	2,404,158	2,498,687	103.9	1,099,748	44.01	(2/)	(2/)	(2/)	(2/)
1975--	2,417,008	2,444,865	101.2	1,058,224	43.28	196,200	8.02	1,190,441	48.69
1976--	2,438,365	2,515,217	103.2	1,061,826	42.22	199,849	7.95	1,253,542	49.84

1/ RECORDS FROM PUERTO RICO NOT INCLUDED BEFORE 1976.
2/ MAIN EDIT NOT RUN IN JANUARY 1975, SO FIGURES ARE NOT AVAILABLE.

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